

Application No. 10/697,413
Amendment dated May 20, 2005
Reply to Office Action of March 3, 2005
Attorney Docket No. 1731D1/RC

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-44: (cancelled)

Claim 45 (currently amended): A thermosetting composition comprising:

(a) a first reactant comprising functional groups;

(b) a crosslinking agent having at least two functional groups that are reactive with the functional groups first reactant in (a); and

(c) a copolymer flow control agent comprising a copolymer comprised of at least 30 mol % of segments comprising alternating residues derived from a donor monomer selected from the group consisting of isobutylene, diisobutylene, dipentene and isoprenol, and an ethylenically unsaturated acceptor monomer, wherein said copolymer is substantially free of maleate-type monomer segments and fumarate-type monomer segments and the copolymer flow control agent is prepared in the presence of a free radical initiator and is substantially free of and prepared in the absence of Lewis acids and transition metals.

Application No. 10/697,413
Amendment dated May 20, 2005
Reply to Office Action of March 3, 2005
Attorney Docket No. 1731D1/RC

46 (Original): The thermosetting composition of claim 45, wherein said copolymer has a number average molecular weight of from 500 to 20,000.

Claim 47 (previously presented): The thermosetting composition of claim 45, wherein said copolymer flow control agent is present in an amount of from 0.01 percent by weight to 20 percent by weight, based on the total resin solids weight of said thermosetting composition.

48 (Original): The thermosetting composition of claim 45, wherein said thermosetting composition is a liquid.

49 (Original): The thermosetting composition of claim 45, wherein said thermosetting composition is a solid in particulate form.

50 (Original): The thermosetting composition of claim 45, wherein the functional groups of the first reactant (a) are selected from the group consisting of epoxy, carboxylic acid, hydroxy, amide, oxazoline, aceto acetate, isocyanate, methylol, methylol ether and carbamate, and the functional groups of crosslinking agent (b) are reactable with those in the first reactant (a), and are selected from the group consisting of epoxy, carboxylic acid, hydroxy,

isocyanate, capped isocyanate, amine, methylol, methylol ether, and beta-hydroxyalkylamide.

51 (Original): The thermosetting composition of claim 50, wherein said first reactant is selected from carboxylic acid functional polymers, and said crosslinking agent is a beta-hydroxyalkylamide functional crosslinking agent.

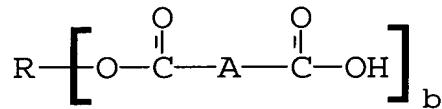
52 (Original): The thermosetting composition of claim 50, wherein said first reactant is selected from hydroxy functional polymers, and said crosslinking agent is a capped isocyanate functional crosslinking agent.

53 (Original): The thermosetting composition of claim 50, wherein said first reactant is selected from acid functional polyesters and said crosslinking agent is selected from glycidyl isocyanurates and bisphenol A epoxides.

54 (Original): The thermosetting composition of claim 50, wherein said first reactant is selected from epoxide functional polymers and said crosslinking agent is a carboxylic acid functional crosslinking agent.

Application No. 10/697,413
Amendment dated May 20, 2005
Reply to Office Action of March 3, 2005
Attorney Docket No. 1731D1/RC

55 (Original): The thermosetting composition of claim 54, wherein said first reactant is an epoxide functional acrylic or methacrylic polymer, and said carboxylic acid functional crosslinking agent is selected from the group consisting of dodecanedioic acid, azelaic acid, adipic acid, 1,6-hexanedioic acid, succinic acid, pimelic acid, sebacic acid, maleic acid, citric acid, itaconic acid, aconitic acid, carboxylic acid functional crosslinking agents represented by the following general formula:



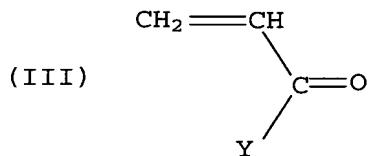
wherein R is the residue of a polyol, A is a divalent linking group having from 2 to 10 carbon atoms, and b is an integer of from 2 to 10, and mixtures of such carboxylic acid functional crosslinking agents.

56 (Original): The thermosetting composition of claim 55, wherein said polyol from which R is derived is selected from the group consisting of ethylene glycol, di(ethylene glycol), trimethylolethane, trimethylolpropane, pentaerythritol, di-trimethylolpropane and di-pentaerythritol, A is selected from the group consisting of 1,2-cyclohexylene and 4-methyl-1,2-cyclohexylene, and b is an integer of from 2 to 6.

57 (Original): The thermosetting composition of claim 45, wherein the copolymer comprises up to 10 mol % of donor monomers selected from the group consisting of styrene, substituted styrenes, methyl styrene, substituted styrenes, vinyl ethers, vinyl pyridine, and mixtures thereof.

58 (Original): The thermosetting composition of claim 45, wherein the copolymer comprises up to 25 mol % of acrylonitrile.

Claim 59 (previously presented): The thermosetting composition of claim 45, wherein the ethylenically unsaturated acceptor monomer is one or more described by structure (III):



wherein Y is selected from the group consisting of $-\text{NR}^3_2$, $-\text{O}-\text{R}^5-\text{O}-\text{C}(=\text{O})-\text{NR}^3_2$, and $-\text{OR}^4$, R^3 is selected from the group consisting of H, linear or branched C_1 to C_{20} alkyl, and linear or branched C_1 to C_{20} alkylol, R^4 is selected from the group consisting of H, poly(ethylene oxide), poly(propylene oxide), linear or branched C_1 to C_{20} alkyl, alkylol, aryl, alkaryl and aralkyl, linear or branched C_1 to C_{20} fluoroalkyl, fluoroaryl and fluoroaralkyl, a siloxane radical, a polysiloxane radical,

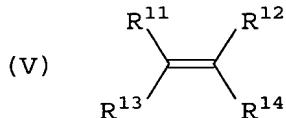
Application No. 10/697,413
Amendment dated May 20, 2005
Reply to Office Action of March 3, 2005
Attorney Docket No. 1731D1/RC

an alkyl siloxane radical, an ethoxylated trimethylsilyl siloxane radical and a propoxylated trimethylsilyl siloxane radical, and R⁵ is a divalent linear or branched C₁ to C₂₀ alkyl linking group.

Claim 60 (previously presented): The thermosetting composition of claim 45, wherein the ethylenically unsaturated acceptor monomer is one or more selected from the group consisting methyl acrylate, ethyl acrylate, butyl acrylate, isobutyl acrylate, isobornyl acrylate, 2-ethylhexyl acrylate, perfluoroalkyl ethyl acrylates wherein the perfluoroalkyl group contains 4-20 carbon atoms, benzyl ether acrylates of a C₉-C₁₀ partially fluorinated alcohol, acrylate esters of a C₉-C₁₀ partially fluorinated alcohol, acryloxyalkyl terminated polydimethylsiloxane radicals, acryloxyalkyl tris(trimethylsiloxy silanes), acryloxyalkyl trimethylsiloxy terminated polyethylene oxide, chlorotrifluoro ethylene, glycidyl acrylate, 2-ethylhexyl acrylate, and n-butoxy methyl acrylamide.

61 (Original): The thermosetting composition of claim 45, wherein the copolymer comprises one or more residues derived from other ethylenically unsaturated monomers of general formula V:

Application No. 10/697,413
Amendment dated May 20, 2005
Reply to Office Action of March 3, 2005
Attorney Docket No. 1731D1/RC



wherein R¹¹, R¹², and R¹⁴ are independently selected from the group consisting of H, CF₃, straight or branched alkyl of 1 to 20 carbon atoms, aryl, unsaturated straight or branched alkenyl or alkynyl of 2 to 10 carbon atoms, unsaturated straight or branched alkenyl of 2 to 6 carbon atoms substituted with a halogen, C₃-C₈ cycloalkyl, heterocyclyl and phenyl, R¹³ is selected from the group consisting of H, C₁-C₆ alkyl, COOR¹⁵, wherein R¹⁵ is selected from the group consisting of H, an alkali metal, a C₁ to C₆ alkyl group, glycidyl and aryl.

62 (Original): The thermosetting composition of claim 61, wherein the other ethylenically unsaturated monomers are one or more selected from the group consisting of methacrylic monomers and allylic monomers.

Claims 63-83: (cancelled)

84 (Original): The thermosetting composition of claim 45, wherein said thermosetting composition includes a resinous phase dispersed in an aqueous medium, said resinous phase comprising (a), (b), and (c).

Claims 85-98: (cancelled)